

Teaching Cylinder Instrument

Abstract

A device that teaches the relationship between a cylinder's surface areas and volume, its diameter and radius, the top circle circumference and area, the arc length, the sector area, the volume of a slice, the front area of the slice and the side area of the slice. The device includes a transparent hollow outer half-cylinder, and a solid inner half-cylinder that can rotate around a common center for both the inner and outer half-cylinders. The outer half-cylinder has marked off units around the 180 degrees of the half-cylinder. The equations of arc length and sector area along with examples of their meanings are shown on the top half circle. The inner half-cylinder also has marked off units around the 180 degrees of the half-cylinder. The equations for volume of a slice, the front surface area of the slice, and the side surface area of the slice are shown. By revolving the inner cylinder, a slice of the cylinder is exposed allowing the arc length, the sector area, the volume of the slice, and the front surface area of the slice to be calculated. By varying the amount of the slice that is exposed, calculating the values of the arc length, the sector area, the volume

of the slice, and the front surface area can be practiced for different size slices. Individual slices can be attached to the inner half-cylinder to make a complete 360-degrees cylinder.